NOTES.

WE regret to see the announcement of the death of Prof. O. C. Marsh, the distinguished palæontologist of Yale University.

THE French Minister of Public Instruction has nominated Prof. Poincaré president of the Bureau des Longitudes; M. Faye, vice-president; and Prof. Lippmann, secretary.

THE annual meeting of the Iron and Steel Institute will be held on Thursday and Friday, May 4 and 5, commencing each day at 10.30 o'clock a.m. The President-elect (Sir William Roberts-Austen, K.C.B.) will deliver his inaugural address; and papers promised by Prof. J. O. Arnold, Mr. H. Bauerman, Mr. E. Disdier, Messrs. Jeremiah and A. P. Head, Baron H. von Jüptner, Prof. H. Louis, Mr. Bertrand S. Summers, and Prof. Wiborgh are expected to be read and discussed. The annual dinner of the Institute will be held in the Grand Hall of the Hôtel Cecil on May 4. The autumn meeting of the Institute will be held in Manchester on August 15–18.

A DINNER which took place at the Fishmongers' Hall on March 14, possesses especial interest to us, on account of the fact that it was given in honour of science, and that the guests included a great number of scientific men, among them being the Presidents of the following Societies and scientific bodies: Royal, Royal Horticultural, Royal College of Physicians, Royal Geographical, Dermatological, Royal Microscopical, Victoria Institute, Royal Statistical, Royal College of Surgeons, Royal Astronomical, Zoological, Linnean, Chemical, Entomological, Philological, and Clinical. The toast of the evening was "Science," and was proposed in an eloquent speech by the Prime Warden, Mr. J. A. Travers, who pointed out the great advance science had made in the last twelve years; he recommended, further, the special study of preventive medicine, to ensure for Great Britain a safer footing in foreign climates. Lord Lister responded to the toast, and urged City Companies to support pure science; he referred also to the help they had rendered the Jenner Institute. Sir William MacCormac then proposed the health of the Prime Warden. The occasion is noteworthy in that it indicates the growing recognition of the value of scientific work.

ON March 18 the Austrian Society of Engineers celebrated its jubilee in the Municipal Council Chamber, Vienna, under the presidency of Mr. F. Berger. There was a large attendance of members; and representatives of sixty-six kindred societies presented addresses. Congratulatory speeches were delivered by the Austrian Minister of Railways, the Minister of Commerce, the Governor of Lower Austria, the Secretary of the Iron and Steel Institute, London, the Secretary of the French Society of Civil Engineers, Paris, and the Secretary of the Society of German Engineers, Berlin. A paper was then read by Mr. A. Rücker on the part taken by the Austrian Society of Engineers in the technical progress of the past fifty years. The Austrian Society is a very influential one. At its foundation in 1848 it numbered seventy-nine members; at the present time there are 2388.

DR. J. N. LANGLEY, F.R.S., University Lecturer on Histology, Cambridge, has been elected a member of the Athenæum Club under the provisions of the rule which empowers the annual election by the Committee of nine persons "of distinguished eminence in science, literature, the arts, or for public services."

THE anniversary meeting of the Chemical Society will be held on Wednesday, March 29, at 3 p.m. Prof. Dewar has presented to the Society a daguerreotype of Dalton, the portrait being one of two taken in 1842. In expressing thanks for the gift on behalf of the meeting at which Prof. Dewar announced his intention of presenting the daguerreotype to the Society, Prof. Tilden remarked that he believed that the well-known portrait of Dalton engraved by Jeans, and appearing as the frontispiece in Roscoe and Schorlemmer's "Treatise on Chemistry," was prepared from a drawing made from this daguerreotype.

FATHER R. P. COLIN, known for his cartographical works on Madagascar, has been elected a correspondant of the Paris Academy of Sciences, in the section of geography and navigation.

THE Paris correspondent of the *Times* states that the French Minister of Agriculture has created at the Agronomic Institute a chair of biology of plants cultivated in France and her Colonies.

THE steamer *Southern Cross* has arrived at Port Chalmers, New Zealand, from Victoria Land, with Mr. Borchgrevink and the other members of the Antarctic expedition under his charge.

PROF. DUCLAUX, director of the Pasteur Institute at Paris, has had the honour of the second class of the Osman Order conferred upon him by the Sultan.

THE New York Academy of Sciences will hold its sixth annual exhibition in the American Museum of Natural History on April 11 and 12. The exhibition will illustrate the advances in various departments of science during last year.

A DEPUTATION of the Decimal Association to the President of the Board of Trade, in favour of the compulsory adoption of the metric weights and measures in this country, was arranged for yesterday as we went to press.

THE Associated Chambers of Commerce passed the following resolution at one of their meetings last week:—"That, in view of the time wasted in teaching a system of weights and measures which, according to the First Lord of the Treasury, is 'arbitrary, perverse, and utterly irrational,' and in the opinion of Her Majesty's Consuls is responsible for great injury to British trade, this association urges Her Majesty's Government to introduce into and endeavour to carry through Parliament as speedily as possible a Bill providing that the use of the metric system of weights and measures shall be compulsory in this country within two years from the passing of the Bill, and suggests that meanwhile the system should be adopted in all specifications for Government contracts."

THE proposal to place in Corsock Parish Church, by half-guinea subscriptions, a memorial window in memory of Prof. James Clerk Maxwell has already been referred to in these columns. A correspondent informs us that, to complete the window, about 40*l.* more is required. There should be no difficulty in obtaining this amount from admirers of Clerk Maxwell who have not yet subscribed. Subscriptions may be sent to Rev. George Sturrock, The Manse, Corsock, by Dalbeattie, N.B.

A QUESTION was asked in the House of Commons on Thursday as to when the North Sea Fisheries Conference would get to work, how the conference would be constituted, and what instructions would be given to it, In reply Mr. Brodrick said: "The Foreign Office are quite aware of the urgency of this question, and have urged the Swedish Government to hurry on the assembly of the conference. The conference will meet in the month of May, and delegates will be sent by the various Powers concerned. This question will be considered by experts and by practical men sitting together. The programme of the conference is now before Her Majesty's Government."

THE report of the Council of the Scottish Meteorological Society, presented at the general meeting of the Society yesterday, mentions, among other matters, that the observations at the two observatories on Ben Nevis are now ready to go to press, down to December 1896, together with a general discussion of the results, and several other discussions of separate important inquiries raised by the observations. A paper on the meteorology of Ben Nevis, accompanying the hourly observations, was read by Dr. Buchan at the meeting of the Royal Society of Edinburgh on March 6. Among the papers in the number of the Society's *Journal* to be published during the coming summer will be a discussion of the annual rainfall of Scotland from the beginning of the century to 1898, with tables giving the annual amounts at many stations from which long-continued observations are available. Another paper will be a discussion of the observations on fog, made at the Scottish lighthouses for the ten years from 1889 to 1898. The heavy and tedious work of charting on daily maps of Scotland the rainfall at 120 stations, the fog at the lighthouses, the storms of wind reported at the lighthouses as having actually occurred, along with the phenomena of weather noted at the Society's stations, proceeds apace, and already about a year and a half of this work may be regarded as completed. This means the construction of 487 maps, specimens of which were shown to the meeting. Grateful reference is made to the gift of 500*l*. by Mr. J. Mackay Bernard, of Kippenross, for the high- and low-level observatories at Ben Nevis. As the result of this patriotic beneficence, the work of the two observatories is still being carried on by the directors.

THE death of Mr. Jeremiah Head, on March 10, deprives the engineering profession of one who has played an important part in mechanical science during the middle and latter part of this century. From an obituary notice in the *Times*, we learn that Mr. Head was born at Ipswich in 1835, being a descendant of an old Quaker family, and was apprenticed in 1854 to Robert Stephenson at Newcastle-on-Tyne. During the term of his indentures he so distinguished himself that when out of his time he was taken on the designing staff of the great civil engineer. In the year 1864 Mr. Head became a partner in a business for the manufacture of iron plates, and after spending twenty years in it, the works were sold to another firm, and Mr. Head became a consulting engineer. With his son he did some notable work during the last few years in bringing before the notice of British steelmakers some of the more important advances that have been made in America in the manufacture of iron and steel. In 1896 he read a paper before the Institution of Civil Engineers on the American and English methods of making steel plates; and so lately as last month he and Mr. A. Head contributed a joint paper to the same institution on the "Lake Superior Iron Ores." These two papers were a revelation to a large number of people in this country, who had not realised how rapidly the Americans were forging ahead in the production of iron and steel, and the many improvements that had been introduced into Transatlantic practice. Mr. Head was president of the Institution of Mechanical Engineers during the years 1885-86, when the institution was passing through a very critical period of its existence. In 1893 he was president of the Mechanical Science Section of the British Association. He was a member of numerous technical and scientific societies, including the Institution of Civil Engineers. He founded the Cleveland Institution of Mining Engineers in the early sixties. Although this is but a local society, it has had great influence on the iron and steel industry of the kingdom, and has been instrumental in causing the Cleveland district to be considered the centre of the British iron industry.

AGAIN the world's record for kite-flying for scientific purposes has been broken at the Blue Hill Observatory, Massachusetts. On February 21 an altitude of 12,440 feet was reached by a recording instrument attached to a string of tandem kites. This is 366 feet higher than the preceding best record. The flight was begun at 3.40 p.m., the temperature at the surface being 40° and the wind seventeen miles an hour. At the highest point the temperature was 12° and the wind velocity fifty miles an hour. Steel wire was used as a flying line, and the kites, four in number, were of an improved Hargreave pattern, with curved surfaces, made after the pattern of soaring birds' wings. The upper kite carried an aluminum instrument weighing four pounds, which recorded graphically temperature, wind velocity, humidity, and atmospheric pressure. The combined kites had an area of 205 square feet and weighed twenty-six pounds, while the weight of the wire was seventy-six pounds. The upper kite remained above two miles for about three hours.

CHARCOAL has been used for many years in Australia to precipitate gold on a large scale from its solution as chloride, and it is doubtless this circumstance which has led to its employment in Victoria to precipitate gold from cyanide solutions. In a paper by Mr. J. I. Lowles, read at the meeting of the Institution of Mining and Metallurgy on March 15, the details and results of the process are given, from which it appears that the expense and inconvenience are far greater than in zinc or electrolytic precipitation. At a typical cyanide mill in Victoria, 10,000 lbs. of charcoal contained in 198 tubs are in constant use to precipitate 700 ozs. of gold per month. To recover the gold the charcoal is burnt, and the ash melted with borax in crucibles. In the course of the month about 8 cwt. of ash is melted with 16 cwt. of borax, the total cost being over 1*s*. 6*d*. per oz. of bullion 900 fine, exclusive of the waste of cyanide which occurs as the solution passes through the charcoal. The chemical interaction involved in the precipitation is not understood.

DR. ALEXANDER AGASSIZ'S munificent gifts of natural history collections to the Museum of Comparative Zoology of Harvard University have already been mentioned in these columns. In the annual report of President Eliot an extract is given from the records of the Corporation of the University, in which the Corporation specify the gifts and express gratitude for them. It appears from this that Dr. Agassiz has never received any salary for his services to the museum in various capacities since 1860. Between September 1, 1871, and September 1, 1897, he expended for the benefit of the museum from his private means, without making any communication on the subject to the President and Fellows, over seven hundred and fifty thousand dollars, including his expenditures on objects now formally transferred to the Corporation, beside contributing about fifty thousand dollars to other university objects in gifts known at the time to the President and Fellows. Dr. Agassiz has thus shown, by devoted service and generous benefactions, his deep concern for the welfare of the museum in which his distinguished father took so great an interest.

THE last *Bollettino* (vol. iv. No. 7) of the Italian Seismological Society contains a valuable study, by Dr. A. Cancani, of the Adriatic earthquake of September 21, 1897. This was by far the strongest earthquake felt in Italy during that year, its disturbed area containing about 235,500 sq. km. The origin, as shown by the isoseismal lines and the observed directions of the shock, lay beneath the Adriatic, about 20 km. from the coast between Pesaro and Ancona. At least two distinct kinds of undulations were perceptible, even without the aid of instruments—namely, rapid vibrations with a period of from ⅕ to ½ a second, and slow oscillations with a period about ten times as long. Within the disturbed area, the earthquake-wave travelled with a velocity of 1·6 km. per second, and, beyond its boundary, as far as Utrecht (1050 km.), with a mean velocity of 3·6 km. per second. Dr. Cancani regards the earthquake as one of a series, probably connected with the bradyseisms of the Adriatic coast of Italy, the existence of which has been proved by Issel; and he points out that the stronger earthquakes of the series appear to recur at intervals of about a century, and others at an average interval of about twenty-three years.

THE Meteorological Council have just issued their report for the year ending March 31, 1898; the considerable delay in the date of publication is due to the form of first submitting it to the Council of the Royal Society and its subsequent presentation to Parliament. The Council continue as in past years to collect data relating to the meteorology of the ocean, and to supply instruments to the Royal Navy and to observers in the Mercantile Marine. The investigations in progress in this branch during the year in question were (1) the meteorology of the Southern Ocean, between the Cape of Good Hope and New Zealand, and (2) the meteorology of the South Atlantic and the west coast of South America. Statistics as to the climates of foreign ports are from time to time supplied to the Admiralty for use in various publications. The results of the forecasts which appear in the morning newspapers show a complete or partial success of 81 per cent., the average for the last ten years being 81·3 per cent., while the results of the special forecasts issued during haymaking season show that 90 per cent. were useful. The success obtained for the storm warnings issued to seaports reached the high figure of 91·8 per cent. In the branch relating to climatology, hourly means of observations made at the principal observatories, and results of the observations at stations of the second order, have been published in the same form as in previous years. Among the miscellaneous investigations, the important subject of anemometry has occupied a prominent place, and the subject of atmospheric electricity has been brought under consideration with a view to utilise the records that have been made at Kew Observatory for many years past.

THE Council of the Essex Field Club appeal to those taking an interest in the spread of information on natural science, and in popular education, for donations towards the capital sum of 1000*l.* required for the equipment of the Essex Museum of Natural History at Stratford. It will be remembered that the first stone of this museum was laid in October last. The cost of the building and ground will be about 6000*l.*, towards which Mr. Passmore Edwards contributes 2500*l.*, on condition that the museum shall contain the Essex Field Club's county collections of natural history. The balance of the cost, and the upkeep of the building, will be defrayed by the Corporation of West Ham, acting through their Technical Instruction Committee. The fitting-up of the museum with cabinets, cases, jars, boxes, &c., to contain the various collections, and the numerous and expensive appliances of an educational collection, has to be undertaken by the Essex Field Club, and it is to provide this equipment that the Club makes an appeal to its members and others interested in the extension of scientific knowledge.

AT the meeting of the Anthropological Institute, on February 14, Mr. H. P. Fitz-Gerald Marriott read portions of a lengthy and very complete paper on the secret tribal societies of West Africa. He said that they were merely tribal developments, and not bands of conspirators. He described some of them, such as the Purroh and Kofong, referring to their ritual and dress; but he made known for the first time the few harmless religious societies of the Gold Coast which are unknown to local white residents, not being so highly developed as those in the Sierra Leone or the Niger districts. The societies appear to present a good example of what is generally the case throughout the world, in that the highest grades as a rule are the simplest in externals. Mr. Marriott finished his paper by mentioning a widespread Egyptian or Arabian society called Siri, which existed for the study of magic and occult matters; it had ramified itself all over the western portion of Africa; it is a key to the study of the tribal societies, and it has probably much influenced them. There were also reasons stated to show that monotheism existed in certain portions of Central Africa. The tribal societies must not be confused with murderous leopard societies, which natives themselves regard as we do anarchists; but beyond the civilised boundaries, in many parts where the tribal society was strong, it could be employed for such objects as obtaining labourers, carrying out British laws and other laudable objects by a channel to which the natives were accustomed.

THE Geological Survey of England and Wales has just issued an important practical Memoir on "The Water Supply of Sussex," by Mr. William Whitaker, F.R.S., and Mr. Clement Reid (price 3*s.*). The work deals with the supply of water from underground sources, and is mainly made up of the records of wells and borings. The details of the strata passed through, the grouping of them under the various geological formations, and other particulars are carefully stated; and these records are supplemented by a number of analyses of waters. In the Introduction there is a brief outline of the geology of the county with especial reference to the water-bearing strata. The present Memoir is the first of a series which the Director-General of the Survey proposes to issue, and there can be no doubt that the utility of the institution will be greatly enhanced by these publications.

"THE Geology of the Borders of the Wash, including Boston and Hunstanton," is the title of another Memoir issued this year by the Geological Survey (price 3*s.*). It is the work of Mr. Whitaker and Mr. A. J. Jukes-Browne, with sundry notes by other officers who were engaged in the survey of the eastern counties. A large portion of the area described consists of the alluvial deposits of the Fenland, and there are considerable tracts of Chalk and Glacial drift. The most attractive geological features are those of the famous Red Chalk of Hunstanton, and of the picturesque scarps and warrens of Lower Greensand which border the Fenland, south of Hunstanton, through Snettisham, Dersingham, and Sandringham. The Lower Greensand is here divisible into three portions, of which the Carstone (or "gingerbread" stone) of Hunstanton forms the top, the Snettisham Clay the middle, and the Sandringham Sands the lower portion. Some important additions to our knowledge are contributed by Mr. G. W. Lamplugh, whose observations lead to the conclusion that the Carstone, as a whole, may represent the combined Hythe, Sandgate, and Folkestone Beds of the south of England; that the fauna of the Snettisham Clay agrees with that of the Tealby Limestone of Lincolnshire; while the Sandringham Sands appear to be newer than the Spilsby sandstone, and are presumably equivalent to some portion of the Tealby Clay. Particulars are given of the various divisions of the Chalk and of their fossils; and the appendix contains records of numerous wells and borings in Lincolnshire and Norfolk, and a supplementary geological bibliography of Norfolk.

A SERIES of investigations, to determine the milling qualities of wheats and the nutritive value of flours, has been made by Mr. F. B. Guthrie, chemist to the Department of Agriculture of New South Wales, and special attention is directed to these in the report just issued by the Department. As the immediate result of this work, the Department is in a position to pronounce definitely upon the milling quality of any variety of grain. In conjunction with the purely experimental work, Mr. Guthrie has been enabled to demonstrate the practicability of adjudicating upon wheats entered in prize competition on the basis of their flour product. The agricultural societies in the wheat districts have been so favourably impressed with the utility of the system that it is now customary for wheats, recommended by the judges employing ordinary methods, to be submitted to the milling test before the awards are made.

THE industry of viticulture promises to attain large proportions in New South Wales, the area in the Colony suitable for the production of grapes for wines of all types being practically unlimited. From the report just issued by the Department of Mines and Agriculture, we learn that the appointment of a graduate of one of the large viticultural colleges in Europe, to advise the vignerons as to the cultivation of the vine and the application of more scientific methods of wine production, has been much appreciated by those engaged in the industry. The phylloxera pest, which proved so disastrous a few years ago in Europe, and, unfortunately, appeared in New South Wales also, has received unremitting attention; and in the few places in which the insect has been discovered, the vineyards have been treated with carbon-bisulphide and rigorously uprooted. As a practical measure of protection against the inroads of this pest, the Department has secured from France half a million cuttings of phylloxera-resistant varieties for use as stocks in the planting of new vineyards.

A PRELIMINARY statistical statement of the mineral production of Canada during 1898 has been issued by the Canadian Geological Survey. The total value of the metallic minerals produced is placed at 21,622,601 dollars, while other mineral products have a value of 15,884,596 dollars. The grand total shows an increase of nearly 32 per cent. as compared with 1897, which year showed an increase of 27 per cent. compared with 1896. Whilst these large increases of late years have of course been partly due to the discovery and working of the rich gold-placers of the Yukon, other important mineral industries have also contributed to them, and there is every reason to expect a continued rapid growth in many of them for some years to come, especially as the province of British Columbia continues to develop.

THE "Year-Book and Record" of the Royal Geographical Society for 1899, which has just been published, contains portraits of the first President of the Society, Lord Goderich, and of the present President, Sir Clements R. Markham, K.C.B. The Society now numbers more than four thousand Fellows.

THE thirteenth part of Mr. Oswin A. J. Lee's brilliantly illustrated work, entitled "Among British Birds in their Nesting Haunts," has been published by Mr. David Douglas, Edinburgh. The nests illustrated in the ten plates are of the mistle thrush, great black-backed gull, red-backed shrike, skylark, buzzard, redstart, green woodpecker, linnet, and garden warbler.

THE *Bulletin of Miscellaneous Information* for January, issued by the Botanical Department of Trinidad, and edited by Mr. J. H. Hart, contains papers on the rubber, rice, cacao, and guinea-grass (*Panicum maximum*) industries of the island, and a continuation of the editor's enumeration and description of the Ferns of the West Indies and Guiana.

MR. W. L. DISTANT, the author of "A Naturalist in the Transvaal" and of several well-known entomological works, is about to issue a book called "Insecta Transvaaliensia," in twelve large quarto parts, with coloured plates. It will be mainly founded on the author's own collections and observations, and will be, to a large extent, an epitome of the South African insect fauna, and, we may presume, of the East African insect fauna in general, of which the South African is merely an offshoot.

AN estimate of the importance of electrical industries, and of the large number of people concerned with applied electricity, may be gained from two electrical trades' directories just issued. "*The Electrician* Electrical Trades' Directory and Handbook for 1899"—now in its seventeenth year of publication—testifies to the exceptional progress of the trades connected with applied electricity during the past year, the advance being not only in respect of electric illumination, but also of electric traction in its various forms and electric power supply generally. It has thus been necessary to largely extend the sheet tables of electric lighting and tramway undertakings in Great Britain. All the alphabetical sections have been carefully revised, and the tabular information has been checked. A feature of this handbook is a biographical section containing short biographies of distinguished physicists and electricians, many of them accompanied by half-tone portraits.—"The Universal Electrical Directory" contains the names of the members of the electrical and kindred industries throughout the world, the total number of names of firms and individuals included in it being 25,464. The natural expansion of the electrical industries has caused the addition of nearly two thousand new names to those contained in the volume for 1898. All the names are conveniently classified into nine sub-divisions, so that reference is easy. The volume is invaluable to all who are engaged in the commercial applications of electricity.

A NEW method of preparing Le Verrier's phosphorus suboxide, P_4O, is given by Messrs. A. Michaelis and M. Pitsch in the last number of the *Berichte*. If finely divided phosphorus is treated in the cold with a weak alcoholic solution of caustic soda or potash, it slowly gives off hydrogen, and the liquid becomes an intensely dark red colour. This red solution, when treated with acid, gives a greenish-yellow precipitate, which on analysis proved to be pure P_4O. This can be readily redissolved in weak alkali to a deep red solution, but it appears to be insoluble in all other solvents. As the authors remark, it is curious that the formation of this compound in this way should have so long escaped notice, as the preparation of hydrogen phosphide by the action of hot alcoholic potash upon phosphorus is one of every-day occurrence.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*) from India, presented by Mr. H. Belier; two Black-backed Jackals (*Canis mesomelas*) from South Africa, presented by the Hon. James D. Logan, jun.; two Squirrels (*Sciurus vulgaris*), British, presented by Miss Dorothy Reynolds; two Nicobar Pigeons (*Calaenas nicobarica*) from the Indian Archipelago, presented by Mr. W. H. St. Quintin; a Reed Bunting (*Emberiza schoeniclus*), European, presented by Mr. F. Chatwin; a Broad-fronted Crocodile (*Osteoloemus tetraspis*) from West Africa, presented by Lieut. Kenneth A. Macdonald, A.S.C.; three Cape Vipers (*Causus rhombeatus*), a Puff Adder (*Bitis arietans*), a Rough-keeled Snake (*Dasypeltis scabra*) from South Africa, presented by Mr. S. B. Carlile; a Clouded Tiger (*Felis nebulosa*) from Northern India, four Waxwings (*Ampelis garrulus*), European; three Wandering Tree Ducks (*Dendrocygna arcuata*) from the East Indies, an Adorned Terrapin (*Chrysemys ornata*) from Central America, an Indian Eryx (*Eryx johni*) from India, purchased; a Macaque Monkey (*Macacus cynomolgus*), born in the Gardens.